SIP 1: Increasing the overall epidemic vaccination coverage. Epidemic vaccination coverage: it's a long way to Tipperary

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DOI: https://doi.org/10.1016/j.vaccine.2009.08.014

Vaccine 27 (2009) 6370–6373

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

SIP 1: Increasing the overall epidemic vaccination coverage
Epidemic vaccination coverage: It's a long way to Tipperary!

Vaccination is one of the best ways to fight epidemic influenza. In fact, according to Dr. Kristin Nichol of the Minneapolis VA Medical Center, "influenza is the #1 vaccine preventable disease among adults in the US, accounting for 500,000 deaths each year." Moreover, the disease burden is huge. Of all vaccine preventable deaths in the US, 99% afflict adults and most of these are due to influenza. Moreover, two-thirds of mortality occurs among people 65 and older who are discharged from hospital during the flu season. While the data is from the US, the situation is similar throughout most of the developed world.

Influenza is the number one cause of vaccine preventable deaths in the US

With such a compelling reason to increase vaccination coverage, the World Health Organisation (WHO) advocates vaccination of those over 65 years of age, the immuno-compromised or persons suffering from chronic illnesses such as cardiovascular, respiratory, metabolic and/or renal disease, and healthcare workers. The WHO has also set target coverage rates of 50% by 2006 and 75% by 2010 for the elderly. While many countries support the WHO guidelines, the specific WHO targets have so far only been achieved by one country, the United Kingdom.

"Vaccination is the mainstay of prevention and control, but vaccination is under-utilised. US vaccination rates have been stagnant for nearly a decade."—Dr. Kristin Nichol, Minneapolis VA Medical Center

Disease	Cases	Deaths
Influenza	(millions)	>500,000[a]
Pneumococcal	(millions)	~120,000
Hepatitis A	282,650	1,013
Hepatitis B	146,644	9,694
Measles	60,189	132
Mumps	24,075	7
Rubella	4412	21
Pertussis	53,634	65
Tetanus	486	77

[a] 90% in the elderly.

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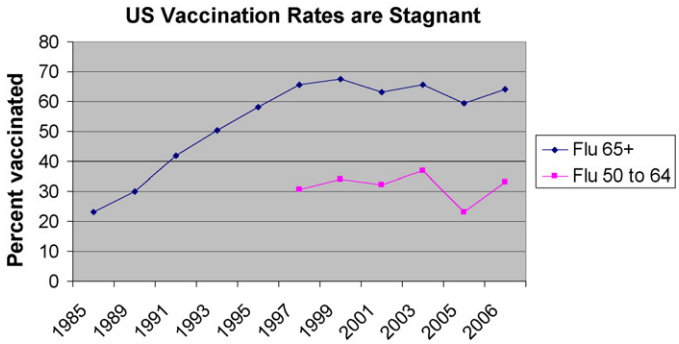
doi:10.1016/j.vaccine.2009.08.014

Vaccination is the mainstay of prevention and control," states Nichol, "but vaccination is under-utilised. US vaccination rates have been stagnant for nearly a decade." There is clearly much room for improvement.



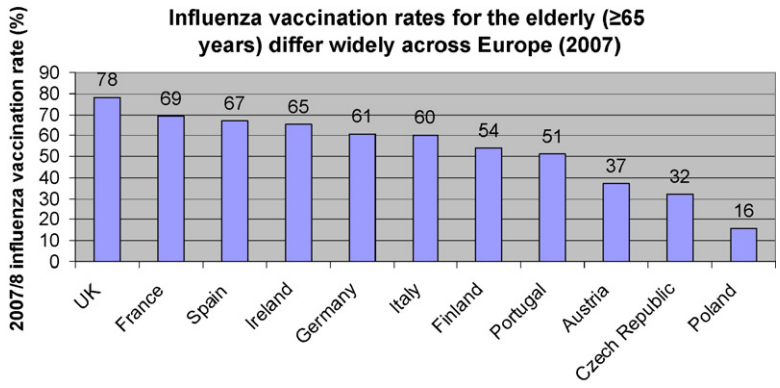
Source: MMWR 2001;50(25):532–37; NHIS (01, 03, January–June 2005).

Current coverage: all over the map

Several studies have attempted to track progress in epidemic vaccination coverage.

A large study examined seasonal influenza vaccination in Europe. The study was conducted by TNS Healthcare (and *Groupe d'Etude et d'Information sur la Grippe* in France). Researchers surveyed 22,000 people over the age of 14 in 11 European countries.

According to Dr. Thomas Szucs of the University of Zurich, the results were not encouraging. The researchers found little improvement from 2007 to 2008, and in some instances vaccination rates were even lower than the previous year. Moreover, there are huge variations in the rate of coverage, with Poland at one end of the spectrum (16%) and the UK at the other (78%). Gaps are even greater for groups under the age of 65, and the vaccination coverage of healthcare workers is even lower, with a high in the UK of only 29% and a low in Poland of 9%. Furthermore, good intentions are not enough. "The number of people saying that they intend to get vaccinated tends to be higher than the number of people who actually do get vaccinated," states Szucs, "positive intentions do not translate into actual coverage."



Research results from a study by the "Macroepidemiology of influenza vaccination study group" (MIVSG) are more encouraging. Although great differences persist, countries also showed extreme growth in coverage, increasing to 292 million doses in 2003 and 329 million doses in 2005. "This represents progress no matter where you are," says Dr. David Fedson, a French-based influenza expert.

The MIVSG is a voluntary, unfunded network of individuals in 73 countries who report on influenza vaccine distribution. Every region of the world is represented in the network, although some regions, such as North America and Europe, are more fully covered. The MIVSG study measured doses distributed from 1997 to 2005 worldwide. Because it measured doses distributed and not actual vaccinations there may be some over-reporting (because there may have been some wastage). Nonetheless, the research gives some clear indications.

As with the TNS study, the MIVSG found extraordinary variation across countries, in terms of vaccination rates as well as vaccination policies. Most countries vaccinate the over 60–65 years age group and those with complications such as renal disease, a cardiopulmonary condition, diabetes mellitus or immunocompromise. Yet Austria vaccinates those who are 50 years and older. Some countries vaccinate children up to 2 years of age, while the US recommendation is that children be vaccinated up to the age of 18. Moreover, vaccination of children does not follow overall trends in a country.

"It is difficult to discern clear reasons for the variation between countries," says Fedson. "Many non-producing countries, for example, use vaccine at rates exceeding those in producing countries. So, the availability or non-availability of supply is apparently not a determining factor in vaccine consumption."

Factors which encourage vaccination: "It's the healthcare worker again. . ."

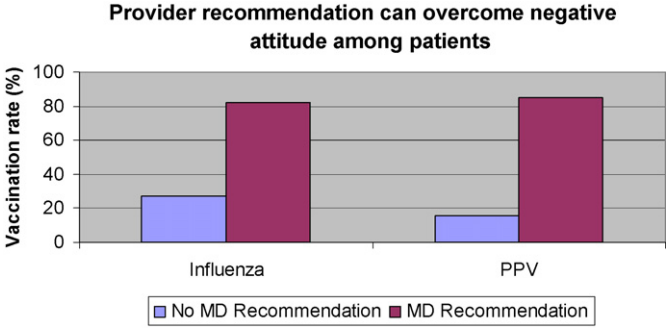
With so much variation across countries and no obvious explanations for the variation, researchers attempted to find answers. The TNS Healthcare survey sought to determine which factors encourage vaccination. "It was an almost sociological exercise in trying to find out why people get vaccinated and why they don't," states Szucs.

"Researchers for the MIVSG in the US discovered that when a doctor or nurse recommended vaccination to positively predisposed patients, 87% of patients got vaccinated. Moreover, even when the patients had a negative attitude towards vaccination 70% of them still got vaccinated if their healthcare provider recommended it."

The main conclusion of the research confirmed what experts have always believed: the role of the healthcare worker is crucial. Researchers for the MIVSG in the US discovered that when a doctor or nurse recommended vaccination to positively predisposed patients, 87% of patients got vaccinated. Moreover, even when the patients had a negative attitude towards vaccination 70% of them still got vaccinated if their healthcare provider recommended it. In contrast, when patients had a positive attitude but their physician did not recommend vaccination, only 8% got vaccinated. A proactive healthcare worker, therefore, has a huge impact on the likelihood of a patient getting vaccinated.

"A provider recommendation can even help negatively disposed patients, and a provider's recommendation is a 'freebie' – it doesn't cost the system much."—Dr. Kristin Nichol, Minneapolis VA Medical Center

"A provider recommendation can even help negatively disposed patients," states Dr. Nichol, "and a provider's recommendation is a 'freebie' – it doesn't cost the system much." As with the MIVSG study, Nichol found that when doctors recommended vaccination to negatively disposed patients, they were more likely to get vaccinated (82%) than when they received no recommendation (27%).



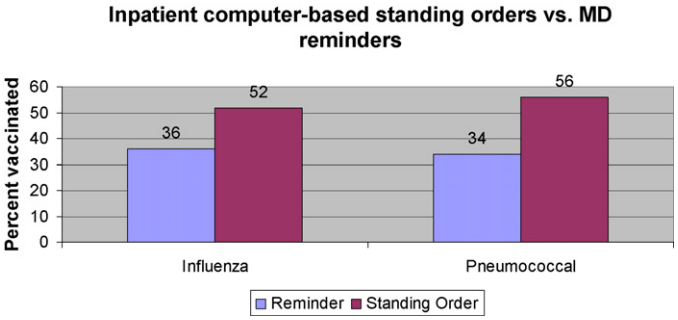
Source: Nichol KL et al. J Gen Intern Med 1996;11:673.

Nichol offers several ways in which healthcare providers can promote vaccination. The most obvious starting points are that physicians and nurses should know the facts, such as when to recommend vaccination, and that they should proactively recommend vaccination. Nichol has several more original suggestions, as well, however. She believes that physicians should put in place systems that promote vaccination or "automate the offering", as she calls it. Physicians could, for example, automate processes to empower nurses. A standing order from a physician that authorises nurses to vaccinate is one example of such "systems approaches".

In a randomised trial of 3777 patients discharged between 1 November 1998 and 31 December 1999 in Indianapolis during the flu season, 50% of inpatients were eligible for influenza

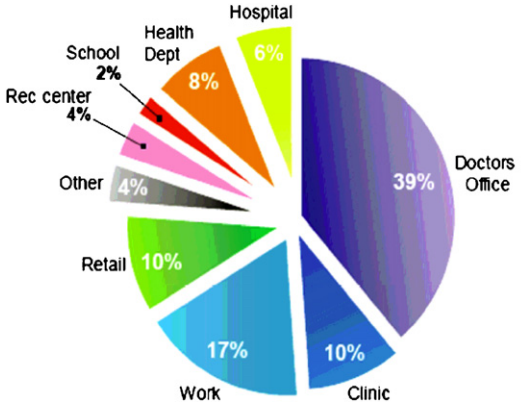
vaccinations. For the standing orders group, the computer generated a computerised order for nurses to vaccinate at the time of discharge. For the reminder group, the computer provided reminders to doctors that included vaccine orders (a pop-up reminder with an order, but it required 1 keystroke + F8 + user password). The reminder group received an average of 5.3 reminders during the patient stay.

Patients from the standing orders group were 16 percentage points more likely to get vaccinated for influenza than patients from the reminders group.



> ***"...fewer than half of all patients are vaccinated at doctor's offices, other important venues are walk-in clinics, work sites and even grocery stores or pharmacies."—Dr. Kristin Nichol, Minneapolis VA Medical Center***

We should also offer vaccination in non-traditional venues, according to Nichol. "Doctors are the biggest slice of the pie," says Nichol, "but fewer than half of all patients are vaccinated at doctor's offices, other important venues are walk-in clinics, work sites and even grocery stores or pharmacies."



- 39% at a doctor's office/HMO
- 17% at their place of employment
- 10% at a clinic or community health center
- 10% at a retail setting (grocery or drug store)
- 8% at a health department
- 6% at a hospital or emergency department
- 4% at a senior/recreation center
- 4% at a site classified as "other"
- 2% at a school

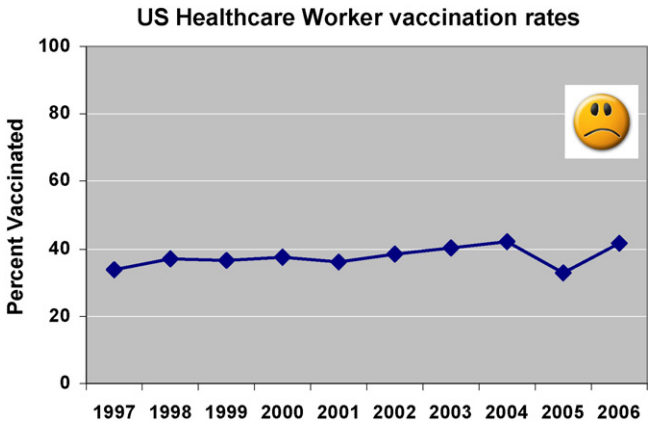
Source: Centers for Disease Control and Prevention - Influenza Vaccine Supply Surveys 2005-06 (Gallup Results)

Healthcare providers should also use patient reminders and other strategies to increase patient demand for vaccination. They can keep better records and monitor the number of vaccinations. Providers tend to overestimate the number of patients they have actually vaccinated, according to Nichol.

> ***"Healthcare workers who are themselves vaccinated are more likely to vaccinate their patients."—Dr. Kristin Nichol, Minneapolis VA Medical Center***

Above all, Nichol believes that we should "practice what we preach". Healthcare workers should follow the maxim of "first do no harm". They can reduce the risk of transmitting influenza to their patients by getting vaccinated themselves. Moreover, although the causality is unclear, there is a correlation between the vaccination status of healthcare workers and their patients. "Healthcare workers who are themselves vaccinated are more likely to vaccinate their patients," says Nichol.

US Healthcare Worker vaccination rates



Source: NHIS.

Other ways to encourage vaccination

While undoubtedly important, focusing on the role of the healthcare worker is not the only strategy for increasing vaccine coverage. "We can capture missed opportunities by extending the vaccination season," states Nichol. The demand for vaccination tends to spike well before the number of influenza cases spikes. This suggests to Nichol that there are cases of influenza that could still be prevented by vaccination.

Another strategy is to target hospitalised patients. According to Nichol, hospitalisation is "a marker for increased risk". Moreover, hospitalised patients may be less likely to be immunised.

Reimbursement and education are other important ways to encourage vaccination that are frequently mentioned. The University of Zurich study found that lack of funding is correlated with dramatically lower vaccination rates. Free or reimbursed vaccination, is not necessarily always the solution, however. Ultimately, other factors as simple as the convenience of getting a vaccination may play an important role.

How to increase coverage: the way forward

The level of vaccination coverage is the result of an interplay among multiple factors: the commitment, motivation and organisation of healthcare workers, policy decisions at the level of the healthcare system and the awareness and sophistication of patients themselves. Nonetheless, there are a number of overall strategies which can make a difference. Aside from encouraging healthcare workers to proactively recommend vaccination, individual

countries can also put in place specific policies such as improving coverage of individuals at risk and of children. On the level of the healthcare provider, a study conducted in the US has identified organisational change as by far the most important factor.

Sharing information is also important. Being compared with one's neighbours is effective because of "the embarrassment factor": countries are embarrassed if they are behind.

Ultimately, however, policies and strategies are only as effective as the people who devise and implement them.

SIP 1: Increasing the overall epidemic vaccination coverage 15 September 2008

Chair:

Dr. A. Monto, University of Michigan, USA.

Speakers:

Dr. D. Fedson, France: Increasing the overall epidemic vaccination coverage: the macroepidemiology of influenza vaccination.
Dr. T. Szucs, Institute of Social and Preventive Medicine, University of Zurich, Switzerland: Influenza vaccination coverage rates in four European countries during the winter of 2007/08.
Dr. K. Nichol, Minneapolis VA Medical Center, USA: Maximising seasonal influenza vaccination coverage.